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<div>466 7590 03/11/2010</div> <div>YOUNG & THOMPSON</div> <div>209 Madison Street</div> <div>Suite 500</div> <div>Alexandria, VA 22314</div>				
<div>EXAMINER</div> <div>SHUMATE, ANTHONY R</div>				
<div>ART UNIT PAPER NUMBER</div> <div>1797</div>				
<div>NOTIFICATION DATE DELIVERY MODE</div> <div>03/11/2010 ELECTRONIC</div>				

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Office Action Summary

Application No.

10/592,938

Applicant(s)

HAGG ET AL.

Examiner

ANTHONY SHUMATE

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006 and 20 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 15 September 2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Summary

1. This is the initial Office action based on the 10/592,938 application filed 15 September 2006.
2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
3. Claims 1-18 are pending and have been fully considered.

Information Disclosure Statement

4. The listing of references in the specification (at the end) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

In the IDS filed 9/15/06, the non patent literature document crossed out has not been considered because no copy has been submitted.

Requirement for Information

5. Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

In response to this requirement, please provide copies of each publication which any of the applicants authored or co-authored and which describe the disclosed subject matter of membranes.

This requirement has been made because it appears that at least one of the inventors has published work particularly pertinent to the disclosed subject matter as detailed in the following rejection.

In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter is not indicated, the subject matter found in applicant's disclosure.

The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained may be accepted as a complete reply to the requirement for that item.

The fee and certification requirements of 37 CFR 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 CFR 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 CFR 1.105 are subject to the fee and certification requirements of 37 CFR 1.97.

A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the Office action.

Drawings

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "A" has been used to designate both a tank and a gas flow line. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as

either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "B" has been used to designate both a tank and a pressure indicator. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: B at figure 1 and D at figure 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply

to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

9. The drawings are objected to because the scale and label for the ordinate for figures 6 and 7 is of poor quality. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are

not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

10. The disclosure is objected to because of the following informalities: Page 9 line 33 of the specification has the phrase "AC." The phrase "AC" is unclear.

The disclosure is also objected to because on 10-11, applicants list references 1-8 and this is improper and should be provided on an IDS in necessary.

The disclosure is also objected to because on pages 1, 4, etc. applicants refer to references 1-8 defined in the back of the discloses and this is improper.

Appropriate correction is required.

Claim Objections

11. Claims 8 and 9 objected to because of the following informalities: Claim 8 has the phrase "about, 50,000, for" which is unclear, since there are so many commas in the phrase. Appropriate correction is required.

112

12. Claims 13 and 18 objected to because of the following informalities: Claim 13 has the phrase "swelling said polyvinylamine of said membrane by exposing said polyvinylamine **for** water vapor" which is unclear. (emphasis added by bolding)
Appropriate correction is required.

13. Claims 12-15 and 18 objected to because of the following informalities: 37CFR 1.75(i) Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation.
- Appropriate correction is required.

Claim Rejections - 35 USC § 101

14. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.\

15. Claim 16 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

16. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

17. Claims 2 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 has the phrase "polyvinylamine comprises water" which is unclear. It is the Examiner's position that the compound polyvinylamine does not comprise water.

18. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, the phrase "cut-off" is unclear as to with the claimed molecular weight parameter is "less than", "more than," or having some other relation with the recited value.

19. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 6, the phrase "such about" which is similar to "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

20. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 6, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

21. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Instant claim 6 is unclear as to whether the phrase "less than the molecular weight of the polyvinylamine" is an option for the molecular weight cut-off compared to the phrase "about 10,000."

22. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 6, the phrase "cut-off" is unclear as to with the claimed molecular weight parameter is "less than", "more than," or having some other relation with the recited value.

23. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 8, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

24. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 8, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

25. Claims 6, 8, 9, 14, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether

the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 8 recites the broad recitation above about 30,000, and the claim also recites above 100,000 which is the narrower statement of the range/limitation.

26. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 14, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

27. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 14, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

28. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 provides for the use of a membrane according to claim 1, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 16 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

29. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 18, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

30. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 18, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

32. Claims 1-4 and 7-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WANG et al. (CN-A-1363414) ("WANG") in view of Quinn et al. Membrane Science 1995, 104, 139-146 ("QUINN139"), Quinn et al. Membrane Science 1997, 131, 49-60 ("QUINN49"), Quinn et al. Membrane Science 1997, 131, 61-69 ("QUINN61") and the MERCK INDEX of "ammonium fluoride", as evidenced by the article entitled "Novel Fixed-Site-Carrier Polyvinylamine Membrane for Carbon Dioxide capture," and PINSCHMIDT, JR., et al. (US 4973410).

Applicant admits on the record at page 2 paragraph 2 of the instant specification, "CN-A-1363414 discloses the use of FSC membranes for the

purpose of separating CO₂ from gases like N₂, O₂, CO and CH₄. This publication discloses a process for preparing a composite membrane to separate carbon dioxide gas from a gas mixture by hollow or flat sheet membranes of polysulfone, polyacrylonitrile, or polyether sulfone through dipping the membrane in polyvinylamine solution for 5-60 minutes, cross-linking with 5-50% glutaraldehyde solution for 5-40 minutes and in a solution of sulphuric acid or hydrochloric acid for 5-30 minutes, followed by drying and washing with water."

It is the Examiner's position that dipping the polysulfone membrane in polyvinylamine solution inherently coats the polysulfone membrane with polyvinylamine.

Also, Applicant admits on the record that at page 4327 column 2 last paragraph of "Novel Fixed-Site-Carrier Polyvinylamine Membrane for Carbon Dioxide capture," "The method used for crosslinking may also contribute in a positive way to the selective transport of CO₂. Quinn et al. ³²⁻³⁴ (Quinn et al., references in the rejection heading above) suggested the possible role of fluoride ions in facilitated transport in a swollen membrane, as illustrated in Figure 2."

QUINN et al. (,41, 61 and 139) all teach in the entire disclosures the possible role of fluoride ions in facilitated transport in a swollen membrane.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to simply substitute the hydrogen sulfuric acid of WANG with hydrofluoric acid since Quinn et al. ³²⁻³⁴ (Quinn et al., references in the rejection heading above) suggested the possible role of fluoride ions in

facilitated transport in a swollen membrane, alternatively since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2144.05 PART II-A)

[MERCK provides extrinsic evidence that ammonium fluoride forms an acid aqueous solution.]

Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to simply substitute the hydrogen sulfuric acid of WANG with ammonium fluoride of MERCK, since Quinn et al.³²⁻³⁴ (Quinn et al., references in the rejection heading above) suggested the possible role of fluoride ions in facilitated transport in a swollen membrane, alternatively since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. (MPEP 2144.07).

QUINN49 teaches at page 55 column 2 paragraph 1 gas streams must contain some water vapor to maintain permselectivity. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide water vapor, since QUINN49 teaches at page 55 column 2 paragraph 1 gas streams must contain some water vapor to maintain permselectivity. It is the Examiner's position that the presence of water vapor intrinsically causes the membrane to swell absent evidence otherwise.

WANG does not explicitly teach the molecular weight of the polyvinylamine. But, WANG teaches at the abstract polyvinylamine. Also, it is the Examiner's position that polyvinylamine of WANG intrinsically has a molecular weight. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a polyvinylamine within the claimed molecular range(s), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2144.05 PART II-A)

As evidence to support discovering the optimal or workable ranges for crosslinking, the following references are applied.

Applicant admits on the record at page 4330 column 1 of "Novel Fixed-Site-Carrier Polyvinylamine Membrane for Carbon Dioxide capture," "The dried cast membranes were crosslinked by different procedures to find the optimum method:

1. Glutaraldehyde (50%, 30 min);
2. Glutaraldehyde (50%, 30 min), and then H_2SO_4 (pH=1, 10-30 min);
3. N_4F (0.5 M, 2 h);
4. Glutaraldehyde (50%, 30 min), and then NH_4F (0.5 M, 2 h);
5. H_2SO_4 (pH=1, 10-30 min) or HCl (pH=1, 10-30)."

Also, PINSCHMIDT, JR., et al. (US 4973410) provides extrinsic evidence at the title and examples 1-3 crosslinking vinylamine polymer (i.e. polyvinylamine) in a solution of HCl and Glutaraldehyde.

In view of this, the limitations of claims 1-4 and 7-18 are met.

33. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over WANG et al. (CN-A-1363414) ("WANG") in view of Quinn et al. Membrane Science 1995, 104, 139-146 ("QUINN139"), Quinn et al. Membrane Science 1997, 131, 49-60 ("QUINN49"), Quinn et al. Membrane Science 1997, 131, 61-69 ("QUINN61") and the MERCK INDEX of "ammonium fluoride", as evidenced by the article entitled "Novel Fixed-Site-Carrier Polyvinylamine Membrane for Carbon Dioxide capture," and PINSCHMIDT, JR., et al. (US 4973410) as applied to claims 1-4 and 7-18 above and further in view of Applicant admission on page 5 first paragraph of the instant specification.

Applicant admits on the record at page 5 first paragraph of the instant specification that Danish Separation Systems AS provides a flat sheet membrane of polysulfone with a molecular weight cut-off of 20,000.

WANG discloses the use of polysulfone but is silent as to the molecular weight of the material

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the polysulfone defined by Danish Separation Systems AS as the polysulfone according to WANG, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious

design choice. (MPEP 2144.07). It is to be noted that the two polysulfone materials are used for the same purpose.

In view of this, the limitations of claims 5-6 are met.

The following is an alternative rejection to the one defined above.

34. Claims 8, 9, 14, 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WANG et al. (CN-A-1363414) ("WANG") in view of Quinn et al. Membrane Science 1995, 104, 139-146 ("QUINN139"), Quinn et al. Membrane Science 1997, 131, 49-60 ("QUINN49"), Quinn et al. Membrane Science 1997, 131, 61-69 ("QUINN61") and the MERCK INDEX of "ammonium fluoride", as evidenced by the article entitled "Novel Fixed-Site-Carrier Polyvinylamine Membrane for Carbon Dioxide capture," and PINSCHMIDT, JR., et al. (US 4973410) as applied to claims 1-4 and 7-18 above, and further in view of applicants admission on page 4 of the specification.

Applicant admits on the record at page 4 lines 20-25 of the instant specification, "The Hofmann reaction was suggested as a quick and convenient method of preparing PV Am from PAA by TANAKA et al. (see references 5-7)" and admit that achieving the molecular weight needed is determined by reaction conditions which is within the scope of the skilled artisan.

WANG does not explicitly teach the molecular weight of the polyvinylamine. But, WANG teaches at the abstract polyvinylamine. Also, it is the Examiner's position that polyvinylamine must have molecular weight.

As admitted by applicants, there is a relationship between reaction conditions and degree of polymerization of polyvinylamine. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a polyvinylamine within the claimed molecular range(s), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2144.05 PART II-A)

In view of this, the limitations of claims 8, 9, 14, 15, and 18 are met.

Conclusion

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. BAYLISS et al. (US 6,431,280) August 13, 2002 Method for placement of blocking gels.
- b. ELSNER et al. (US 5,874,569) February 23, 1999 Method of preparing tresyl-activated dextran.
- c. FIGULY (US 5,667,774 A) September 16, 1997 Crosslinked polymeric ammonium salts

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY SHUMATE whose telephone number is (571)270-5546. The examiner can normally be reached on M-Th 9-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Marcheschi can be reached on (571)272-1374. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A.S./
Examiner Art Unit 1797

/Michael A Marcheschi/
Supervisory Patent Examiner, Art
Unit 1797